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# ARIZONA TIMBER PRODUCTION AND MILL RESIDUES, 1974

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## ABSTRACT

*1974 Arizona roundwood timber production was 78.9 million cubic feet, down from the 1969 estimate of 88.5 million cubic feet. Round pulpwood production was 7.9 million cubic feet, up from 7.6 million cubic feet in 1969. The estimated volume of residues from sawmills was 33.9 million cubic feet, of which 86 percent was used.*

KEYWORDS: primary wood products, sawtimber, pulpwood, sawmill residues use

In 1974, timber production in Arizona was nearly 79 million cubic feet, a decline from 1966-1969 levels (about 88.5 million cubic feet) that were reached at the peak of an upward trend that began in 1952 (fig. 1).

Saw logs continued to be the predominant product, accounting for about 72 percent of the volume of all roundwood harvested (table 1). The 56.7 million cubic feet (363.2 million board feet)[1] of saw logs were about 14 percent less than 1969 production of 66.1 million cubic feet.

Pulpwood volume continued to increase with 1974 production up 4 percent from 1969 to 7.9 million cubic feet. Production of all other roundwood products combined decreased about 3 percent from 1969.

Most of the volume of saw logs received at mills (about 312 million board ft.) was ponderosa pine (table 2). Douglas-fir mill receipts totaled about 21 million board feet. Volume of other species, including Engelmann spruce and true firs, was about 30 million board feet.

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[1] International 1/4-inch log rule is used throughout this report for board-foot volumes of roundwood, unless otherwise specified.

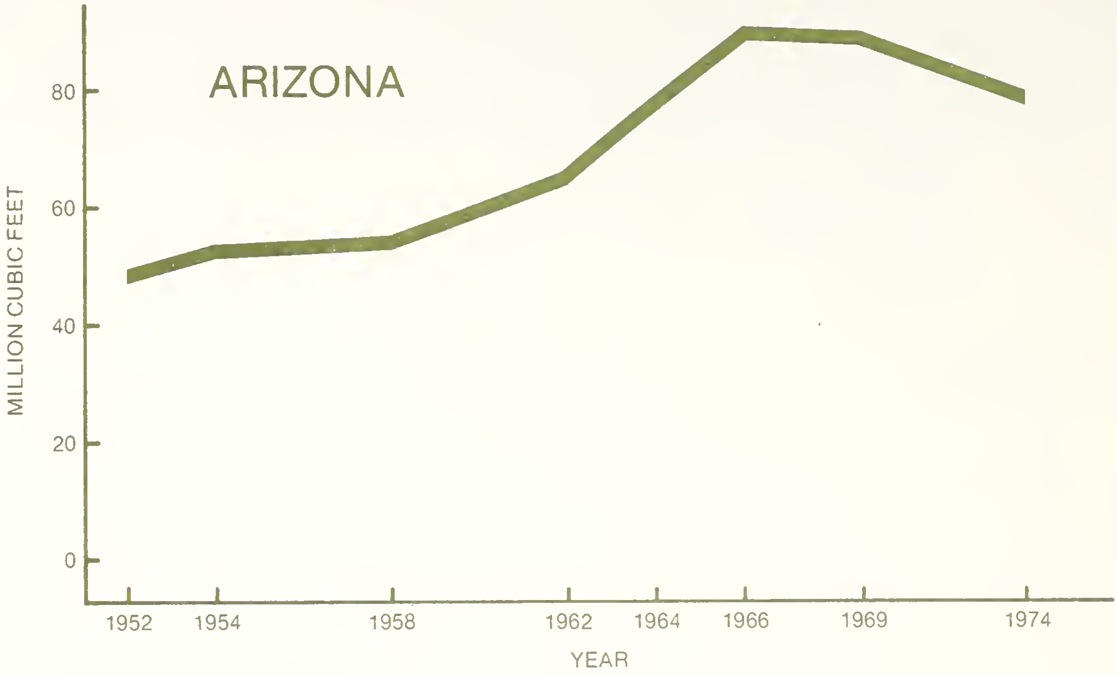

*Figure 1.--Roundwood harvest, 1952-1974. Plotted volumes through 1969 are from Setzer (1971).*

Table 1.--*Roundwood harvest from Arizona timberlands by species and product, 1974*

| Product | True firs | Engelmann spruce | Ponderosa pine | Douglas-fir | Aspen | Other species[1] | All species: Volume | All species: Percent |
|---|---|---|---|---|---|---|---|---|
| | *Thousand cubic feet* | | | | | | | |
| Saw logs | 3,751 | 919 | 48,652 | 3,289 | -- | 47 | 56,658 | 71.8 |
| Pulpwood | -- | 762 | 5,649 | 1,144 | 381 | -- | 7,936 | 10.0 |
| Miscellaneous industrial wood[2] | -- | -- | 317 | -- | 43 | 6 | 366 | .5 |
| Posts, fuelwood, miscellaneous farm timbers | -- | -- | 286 | -- | -- | 13,689 | 13,975 | 17.7 |
| Total | 3,751 | 1,681 | 54,904 | 4,433 | 424 | 13,742 | 78,935 | 100.0 |
| Percent of total | 4.8 | 2.1 | 69.6 | 5.6 | .5 | 17.4 | 100.0 | |

[1] Includes juniper; limber, pinyon, and whitebark pines; hardwoods.
[2] Includes commercial poles, excelsior bolts, and mine timbers.

Table 2.--*Mill receipts of saw logs from Arizona timberlands by species and county of origin, 1974*

| County | Species | | | | | All species | |
|---|---|---|---|---|---|---|---|
| | True firs | Engelmann spruce | Ponderosa pine | Douglas-fir | Other softwoods | Volume | Percent |
| - - *Thousand board feet, International 1/4-inch rule* - - | | | | | | | |
| Apache | 9,496 | 324 | 57,790 | 1,659 | 72 | 69,341 | 19.1 |
| Coconino | 5,152 | 1,456 | 126,139 | 3,472 | -- | 136,219 | 37.5 |
| Gila | -- | -- | 14,306 | -- | -- | 14,306 | 3.9 |
| Greenlee | 2,828 | 301 | 1,471 | 5,676 | 212 | 10,488 | 2.9 |
| Navajo | 6,247 | 3,808 | 104,331 | 9,641 | 19 | 124,046 | 34.1 |
| Pima | 318 | -- | 5,411 | 636 | -- | 6,365 | 1.8 |
| Yavapai | -- | -- | 2,417 | -- | -- | 2,417 | .7 |
| Total | 24,041 | 5,889 | 311,865 | 21,084 | 303 | 363,182 | 100.0 |
| Percent of total | 6.6 | 1.6 | 85.9 | 5.8 | .1 | 100.0 | |
| - - - - - - *Thousand board feet, Scribner* - - - - - - - | | | | | | | |
| Apache | 8,478 | 289 | 51,598 | 1,481 | 64 | 61,910 | 19.1 |
| Coconino | 4,600 | 1,300 | 112,624 | 3,100 | -- | 121,624 | 37.5 |
| Gila | -- | -- | 12,773 | -- | -- | 12,773 | 3.9 |
| Greenlee | 2,525 | 269 | 1,313 | 5,068 | 189 | 9,364 | 2.9 |
| Navajo | 5,578 | 3,400 | 93,153 | 8,608 | 17 | 110,756 | 34.1 |
| Pima | 284 | -- | 4,831 | 568 | -- | 5,683 | 1.8 |
| Yavapai | -- | -- | 2,158 | -- | -- | 2,158 | .7 |
| Total | 21,465 | 5,258 | 278,450 | 18,825 | 270 | 324,268 | 100.0 |
| Percent of total | 6.6 | 1.6 | 85.9 | 5.8 | .1 | 100.0 | |

Approximately 38 percent of Arizona's saw logs came from Coconino County in 1974. Navajo County produced 34 percent, up from 23 percent in 1969 and 13 percent in 1966. Apache County saw log production was slightly more than 19 percent of the State total, down from 25 percent in 1969.

About 59 percent of the timber produced in 1974 came from National Forest lands. Nearly all of the remainder came from Indian and other private lands. In 1966 about 75 percent of the timber produced came from National Forest lands with Indian lands supplying most of the balance.

The trend of increasing sawmill residues utilization continued in 1974. Eighty-six percent of the volume of residues produced was used, compared to 54 percent in 1969 (table 3). Coarse residue utilization approached 100 percent, largely because about 12 of Arizona's sawmills have chipping equipment, and the dozen or so smaller mills without chippers have ready fuelwood markets.

Table 3.--*Estimated volume of used and unused residues from sawmills in Arizona, 1974*

| Residues | Total |  | Unused |  | Used |  |
|---|---|---|---|---|---|---|
|  | 1969 | 1974 | 1969 | 1974 | 1969 | 1974 |
|  | *Thousand cubic feet* |  |  |  |  |  |
| Bark | 10,578 | 7,224 | 8,025 | 1,010 | 2,553 | 6,214 |
| Coarse[1] | 16,475 | 12,567 | 2,469 | 498 | 14,006 | 12,069 |
| Fine[2] | 17,855 | 14,153 | 10,245 | 3,365 | 7,610 | 10,788 |

[1] Material suitable for chipping, such as slabs, edgings, and trimmings.

[2] Material such as sawdust and shavings.

Residues were used predominantly for pulp chips and fuel, with some bark and fine residues used for livestock bedding and mulch.

Arizona's 64.5 million cubic feet of timber production from growing stock in 1974 represents 1.34 percent of the State's net growing stock volume on commercial forest land. Comparable gross growth is 1.79 percent of net growing stock volume. Figure 2 shows timber production for two selected years, net annual growth, and annual mortality. Estimates of commercial forest land area by site classes, growing stock volume, growth, mortality, and salvable dead volumes are for 1970 (Green and Setzer 1974).

The figure 2 comparisons suggest that Arizona timber, under present forest management, is being harvested near the maximum sustainable level.

Volume of products from dead trees was 10.2 million cubic feet, which is about 68.2 percent of annual mortality or about 7.7 percent of the State's total volume of salvable dead trees. Apparently few opportunities remain to increase timber production by capturing new mortality but perhaps additional utilization of existing salvable dead material is possible.

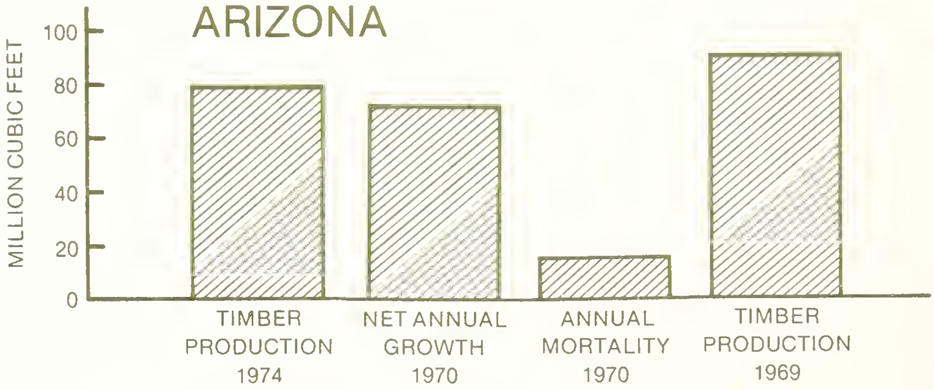

*Figure 2.--Relationship of timber production for 1974 and 1969, net annual growth, and annual mortality.*

Average stocking of Arizona's commercial forest land including all classes of timber is 1,435 cubic feet per acre. Because partial cutting is commonly used in the State, the average cut per acre is assumed to be about 600 cubic feet (3,000 board feet). Cutting at this rate would have required about 132,000 acres to yield the 1974 harvest volume.

There appears to be a substantial opportunity for increasing annual timber production in Arizona if the potential productivity of the commercial forest land can be reached and maintained. An estimate of potential annual productivity for Arizona is 177.5 million cubic feet. It was calculated by multiplying the midpoint cubic foot value of each site class by its associated area (Green and Setzer 1974) and summing the products.

Expressed in terms of production per acre of commercial forest land, the harvest volume in 1974 was calculated as 21.7 cubic feet, or 91.52 percent of gross growth on commercial forest land. At the full potential level of gross growth, 44.67 cubic feet per acre could be harvested from commercial forest land without cutting more than 91.52 percent of gross growth. This would amount to an increase in harvest of about 84 million cubic feet per year for the State.

## ACKNOWLEDGMENT

We appreciate the cooperation of the owners and operators of Arizona's primary wood-using industries in supplying data for this report. Data were collected jointly by the Arizona State Land Department, Forestry Division; State and Private Forestry, Southwestern Region, Forest Service; and the Intermountain Forest and Range Experiment Station.

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# GLOSSARY

| | |
|---|---|
| Commercial forest land | Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Areas qualifying as commercial forest land have the capability of producing in excess of 20 cubic feet per acre per year of industrial wood under management. Inaccessible areas and areas that cannot be harvested with available equipment are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.) |
| Gross growth | Annual increase in net volume of trees in the absence of cutting and mortality. |
| Growing-stock trees | Live trees of commercial species meeting specified standards of quality or vigor; excludes cull trees. |
| Net annual growth | The increase in net volume of a specified size class for a specific year. (Components of net annual growth include the increment in net volume of trees at the beginning of the specific year surviving to its end, plus net volume of trees reaching the size class during the year, minus the net volume of trees that died during the year, minus the net volume of trees that became rough or rotten trees during the year.) |
| Mill residues | Wood materials from manufacturing plants not utilized for the mill's primary product. (In this report, includes slabs, edgings, trimmings, miscuts, sawdust, and shavings.) |
| Roundwood products | Logs, bolts, or other round sections cut from trees for industrial or consumer uses. (In this report, includes saw logs, pulpwood, fuelwood, piling, poles, hewn ties, mine timbers, and various other round, split, or hewn products.) |
| Site class | A classification of forest land in terms of inherent capacity to grow crops of industrial wood. |
| Timber production | Production of roundwood timber products. |

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